INL classroom education grants help teachers foster interest in science and technology. INL Deputy Lab Director David Hill looks on while students in Krista Jones' technology class at Bellevue Elementary demonstrate robotics technology acquired through an INL mini grant. The study of robotics helped deepen their understanding and skills in mathematics and logic.

Mini Grants stimulate student achievement in science and technology

by Marilyn Whitney, *INL Communications & Public Affairs*

Idaho National Laboratory's Mini Grant program has provided thousands of Idaho students with materials and activities to enhance their experiences in science, technology, engineering and math (STEM). The program, part of INL's STEM education initiative, is designed to encourage students to develop their skills in technical subjects and stimulate their interest in pursuing related careers.

Third- and fourth-graders at Collister Elementary practiced the process of "Think, Build, Test and Do It Again" as they built bridges, dams, towers and models of molecular structures.

In 2009, INL will award $90,000 for innovative STEM projects through two grants:
• The INL STEM Mini Grant provides up to $2,000 to public and private elementary, middle and high school teachers to fund technology or lab equipment, material for special projects, or professional development.

• The 2009 INL Science Laboratory Grant Program, a new offering this year, will provide funding for a school to start a new science lab or to update and enhance existing equipment or programs specifically in the areas of physical science or chemistry.

Deputy Lab Director Dave Hill talks with a tech student on a recent visit to Bellevue Elementary School.

Since 2005, INL has awarded $210,000 to more than 120 teachers across Idaho.

Mini grant recipient Linda Stokes, a teacher in the gifted and talented program at Collister Elementary in Boise, has used INL grants for a number of special projects. With one year's grant, Stokes' third- and fourth-grade students built bridges of balsa wood and experimented to see how much weight they could hold. "If you could have seen the students' faces as each weight was added, you would have known the excitement that INL's funding produced," said Stokes.

Another INL grant provided Collister students with the opportunity to study water and ecosystems and helped fund field trips to the Boise River to gather plant and water samples. Collister students also participated in a space study that included building a "bubble" planetarium, launching model rockets and linking up with professional scientists to share information. According to Stokes, "most importantly, the students learned about new careers and caught the passion each of these leaders had for science and math. This was an invaluable experience for the students, their parents and the teachers involved."

Through INL Mini Grants, more than 1,000 technology education students at Bellevue Elementary School have had opportunities to engage in learning far beyond the scope of their classroom. Tech teacher Krista Jones has used the grants to enhance students' understanding of math and science through projects in robotics, sensor technology and space exploration.

"The sensor probe project allowed my students to collect and analyze data on temperature, light, sound, magnetism and force," Jones says. "My students were even able to use the probes to test their lunar plant growth chambers — a design challenge that Astronaut Barbara Morgan put out to all U.S. kids. In fact, two of my students were chosen to speak live with Barbara and the STS-118 shuttle crew while they were aboard the International Space Station. INL helped to make this once-in-a-lifetime experience happen! The Idaho National Laboratory is an amazing supporter of the Idaho educational system."

INL's Steve Aumeier listens as Bellevue

INL grants have allowed Vince Wray, a science teacher at Shelley High School, to purchase equipment for labs and experiments including handheld GPS units for students in ninth-grade Earth

Science. Wray has also used funds to purchase small gas and diesel engines so students can analyze performance differences between ethanol and bio-diesel. Students follow that with a project to raise and harvest grains, grasses and legumes for ethanol production.

Elementary teacher Krista Jones explains one of the classroom projects made possible through an INL mini grant.

"These grants have allowed me to put together hands-on projects that can be used every year and will touch many students" Wray says.

In Chris Taylor's classroom at Liberty Elementary in Boise, INL mini grants have supported materials for algebra instruction and a unit on the principles of flight. Using "Hands-On Equations," sixth-grade students learn to grasp the abstract concept of algebra in a concrete format. "The results of using this program were stellar," Taylor says. "On the spring Idaho Standard Achievement Test (ISAT), all of my students scored an advanced score on the algebra portion of the math test."

In a five-week cross-curricular flight unit, students researched the history of flight and created instructional illustrated magazines explaining how motorized planes were developed. They then taught the material to second-grade students. The flight unit also included building and testing White Wing Gliders. After building their gliders, students competed to see which glider could stay airborne the longest — the winning glider stayed in the air for more than 30 seconds. In addition to having fun, students learned and demonstrated math concepts such as measurement, data analysis and basic problem solving.

Applications for the 2009 Mini Grants program are due by March 13, 2009, and recipients will be announced in April.

Links:
Read about 2009 INL Mini Grant Programs.

Learn more about INL Education Programs.

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